

Claims

1. A method of making glass comprising:
forming a dispersion of a pyrogenic silica with water, by mixing said pyrogenic silica with water,
gelling the dispersion,
drying the dispersion to obtain a microporous body,
sintering the body at a sufficient temperature for a sufficient time to produce a sintered glass body.
2. The method according to claim 1 further comprising adding tetramethylammonium hydroxide to the silica and water to make the dispersion.
3. The method according to claim 1 further comprising adding acetic acid ethyl ester to the dispersion.
4. The method according to claim 1 further comprising pouring said dispersion into a mold.
5. The method according to claim 1 wherein the pyrogenic silica has the following physiochemical properties:
 - a) average particle size (D_{50} value) $D_{50} \geq 150$ nm (dynamic light scattering, 30 wt%);
 - b) viscosity (5 rpm, 30 wt%) $\eta \leq 100$ m·Pas;
 - c) thixotropy of T_i : $(\eta(5 \text{ rpm})) / (\eta(50 \text{ rpm})) \leq 2$;
 - d) BET surface area 30-60 m²/g;
 - e) compacted bulk = 100-160 g/L; and
 - f) original pH ≤ 4.5 .

6. The method according to claim 5 wherein the pyrogenic silica has a deacidification index of less than 3% on a weight basis.

7. A method of making a sintered glass comprising:

mixing a pyrogenically prepared silicon dioxide with water to form a homogeneous dispersion, said pyrogenically prepared silicon dioxide having the following physicochemical properties:

a) average particle size (D_{50} value) $D_{50} \geq 150$ nm (dynamic light scattering, 30 wt%);

b) viscosity (5 rpm, 30 wt%) $\eta \leq 100$ m·Pas;

c) thixotropy of T_i : $(\eta(5 \text{ rpm})) / (\eta(50 \text{ rpm})) \leq 2$;

d) BET surface area 30-60 m²/g;

e) compacted bulk = 100-160 g/L; and

f) original pH ≤ 4.5

pouring the dispersion into a mold,

gelling the dispersion in the mold to form a gelled body,

removing the gelled body from the mold, and

drying the gelled body to form a microporous green body,

sintering the green body by zone;

sintering under vacuum to thereby obtain a sintered glass body.

8. A glass body made by the method according to claim 1.

9. A glass body made by the method according to claim 5.

10. A glass body made by the method according to claim 6.